IN THE DRAWINGS:

Please enter the sheet of replacement drawings (Figures 3 and 4) that is attached to this Amendment.

REMARKS

The Office Action of January 3, 2007 has been received and its contents carefully considered.

The present Amendment revised the Abstract to conform it to the specification and to otherwise improve its form under US patent practice. The typographical error noted in the top paragraph on page 2 of the Office Action is no longer present, so it is respectfully submitted that the objection to the disclosure should be withdrawn.

The present Amendment also forwards a sheet of replacement drawings, in which Figure 3 is identified as prior art. Accordingly, the drawing objection in the second paragraph on page 2 of the Office Action should be withdrawn.

The present Amendment also revises claim 6 to avoid the antecedent basis problem noted in the third paragraph on page 2 of the Office Action. The objection to claim 6 should therefore be withdrawn.

The present application is directed to a semiconductor device having a transistor that is protected from damage due to electrostatic discharges by a surge absorption element, such as a Zener diode. The use of a surge absorption element to protect a transistor from ESD damage was, of course, known before the present invention. What the inventors of the present application have done is to identify and investigate factors leading to ESD withstanding capability, such as the surface areas of Zener diodes and transistors (see Figure 4 of the application's drawings) and the I-V characteristics of diodes and transistors (see Figure 1).

In practical situations, a design engineer probably does not need to worry about the conditions that need to be fulfilled in order to fully protect a transistor from ESD damage. The engineer can simply select a surge absorption element that will surely be

robust enough to do the job. However, if the surge absorption element is fabricated on the same substrate as the transistor it protects, a surge absorption element that is more robust than necessary to fully protect the transistor will take up more room on the substrate than it needs to. With a knowledge of the conditions for full protection, the present application observes at page 13, lines 17-20, "the size of the surge absorption element can be optimized and the chip size... can be reduced." This avoids what the application calls "surplus surge-absorption capacity" (page 4, lines 5-10).

The present Amendment revises claim 1 to specifically refer to the conditions that were previously recited in the claim as a "first condition" and a "second condition." The Amendment also revises dependent claim 6 in response to a claim objection, as has previously been noted. In addition, the Amendment revises claim 7 to improve its grammar, and adds new dependent claims 8 and 9 to further protect the invention. Claim 8, which recites a range of resistivity of the substrate, is supported (for example) by the passage at page 11 of the application, lines 13-16. Claim 9 recites that surge absorption element "occupies an area on said substrate that is not substantially lager than is necessary in order for said surge absorption element to fulfill said first and second conditions." An ordinarily skilled person who had read the application would recognize that this conservation of space on the substrate is what the inventors had in mind when they said that the size of the surge absorption element can be optimized in order to reduce the size of the chip (page 13, lines 17-20, noted above).

The Office Action rejects all of the claims for obviousness based on US patent 6,365,932 to Kouno et al (which will hereafter be called simply "Kouno" for the sake of convenient discussion). For the reasons discussed below, however, it is respectfully submitted that this rejection should be withdrawn.

Claim 1 provides that a transistor and a surge absorption element are formed on the same substrate and connected in parallel. The surge absorption element fulfills first and second conditions. Claim 1 recites that the first condition is that "said surge absorption element has a resistance during breakdown operation that is smaller than a resistance of the surge absorption element during breakdown operation of said transistor." The second condition is that a "secondary breakdown current of said surge absorption element is larger than a secondary breakdown current of said transistor." At the middle of page 3, the Office Action acknowledges that the Kouno reference does not appear to specifically disclose these conditions. However, the Office Action lists various features allegedly possessed by Kouno's arrangement, including less resistivity than the prior art, a high breakdown voltage, a low turn-on resistance, a breakdown voltage of the MOSFET of about 120 volts, and a breakdown voltage for diode of about 70 volts. From these features, the Office Action continues, "it is the opinion of the Examiner that it would have been obvious to have the resistance of the absorption element smaller while it is in breakdown than when the transistor is in breakdown, since one would not want the surge protection (surge absorption) affecting normal operations of the transistor, and hence, one would want current flow through the absorption element only when there is a surge and not otherwise."

It is undoubtly true that "one would want current flow through the absorption element only when there is a surge and not otherwise," but what this has to do with the relationship between the breakdown resistance of the surge absorption element and the resistance of surge absorption element during breakdown of the transistor is not at all clear. It is also true that "one would not want the surge protection (surge absorption) affecting normal operations of the transistor," but, again, what this has to do with the

relationship between the breakdown resistance of the surge absorption element and the resistance of the surge absorption element during breakdown of the transistor is not at all clear. An ordinarily skilled person would understand that surge protection actually begins when the voltage across the absorption element exceeds the breakdown voltage of the absorption element. Accordingly, the ordinarily skilled person would be unlikely to conclude that the effect of surge absorption on normal operation of the transistor depends on the first condition of claim 1. In view of these considerations, it is respectfully submitted that the Kouno reference would not have led an ordinarily skilled person to the "first condition" recited in claim 1.

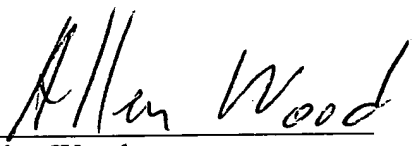
In the sentence bridging pages 3 and 4, the Office Action attempts to link the alleged obviousness of the first condition with the second condition that is recited in claim 1. Even assuming for sake of argument that the Kouno reference might have suggested the first condition to an ordinarily skilled person (despite the above argument to the contrary), it is respectfully submitted that an ordinarily skilled person would have had no reason to think that the secondary breakdown current of the surge absorption element is larger than the secondary breakdown current of the transistor if the breakdown resistance of the surge absorption element is smaller than the resistance of the surge absorption element during breakdown of the transistor.

For the foregoing reasons, it is respectfully submitted that the invention defined by claim 1 would not have been obvious from the Kouno reference. Independent claim 7 includes the two conditions that are recited in claim 1, so claim 7 is patentable over the reference for the same reasons that were discussed above, even apart from the additional limitations recited in the claim.

Since the remaining claims depend from claim 1 and recite additional limitations to further define the invention, they are patentable along with claim 1 by virtue of their dependency alone. It is nevertheless noted that new claim 9 provides that the substrate area devoted to the surge absorption element is not substantially greater than is necessary in order to the first and second conditions of claims 1 to be fulfilled. The Kouno reference is not particularly concerned with the area occupied by a surge absorption element, and certainly would not have led an ordinarily skilled person to the invention defined by claim 9.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. Reconsideration of the application is therefore respectfully requested.

Respectfully submitted,



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